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Appl. No. 10/073,943

Amendment filed February 8, 2005

Reply to Office Action of September 8, 2004

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## REMARKS

Applicant thanks the Examiner for the thorough consideration given the present application. Claims 1-16 and 19-22 are currently being prosecuted. The Examiner is respectfully requested to reconsider his rejections in view of the remarks as set forth below.

### Drawings

The Examiner indicated that Figs. 1-8 should be designated by the legend "prior art" because these figures are identical to those in the corresponding Spanish patent 2,156,525. Applicant submits that this legend is unnecessary. As indicated in the discussion below, this is the corresponding Spanish patent to the present application and is the work of the same inventor. Since this is the corresponding application, Applicant submits that the prior art designation is improper. In view of this, Applicant submits that the figures should be accepted in their present form.

### Rejection Under 35 USC 102

Claims 1, 8-16 and 19-21 stand rejected under 35 USC 102(b) as being anticipated by Spanish patent 2,156,525. This rejection is respectfully traversed.

In order for a reference to qualify under Section (b) of 35 USC 102, there must be a patent or printed publication more than one year prior to the U.S. application date. The U.S. application date for the present application is February 14, 2002. The publication date of the Spanish application is June 16, 2001. Accordingly, the publication of this Spanish application was not more than one year prior to the U.S. filing date of the present application. Accordingly, Applicants submit that the rejection under 35 USC 102(b) is improper.

The Spanish application was filed on January 15, 1999 and published on June 16, 2001. The patent was granted on this application on December 17, 2001 and the patent was published on February 1, 2002. In view of these facts, the Examiner may wish to consider the possibility of a rejection under 35 USC 102(d). However, the availability of the Spanish reference is still limited by its disclosure as defined under 35 USC 112. That is, in order to be used properly in an art rejection, the features of the reference that are relied upon must be disclosed fully. While figures 1-8 in the Spanish application are similar to those of the present U.S. application, the description in the specification is considerably shorter and not as complete. Applicants are providing to the Examiner a rough translation which should help the Examiner understand the limits of the Spanish application as a reference. Should the

Examiner decide to implement a 35 USC 102(d) rejection, the Examiner is requested to review the Spanish application to ascertain that the disclosure relied upon is sufficient to support such a rejection. Even if the figures show the shape of the various parts, it does not necessarily mean that the description of the workings and functions of the parts is completely described in the Spanish application. Accordingly, the Examiner is requested to point out where support can be found in the Spanish application for features described in the claims. As an example, the last paragraph of claim 1 describes that the retaining clip not only has two ends, but points out that the inner end is used for snap engagement with the upper rail and the outer end is engageable with a slot extending along the top edge of the cladding panel. If the Examiner finds support for these two features in the Spanish application, he is requested to point out where he finds such support. Likewise, other features are found in the other claims and support for the rejection of each feature should be located in the Spanish application.

Allowable Subject Matter

It is gratefully acknowledged that the Examiner considers the subject matter of claim 22 as being allowable and the subject matter of claims 2-7 as being allowable if rewritten in independent form. Applicant agrees with the

Examiner that these features are not found in the Spanish reference and are also allowable over the other prior art cited.

**Conclusion**

In view of the above Remarks, it is believed that the claims are allowable. In view of this, reconsideration of the rejection and allowance of all of the claims are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse (Reg. No. 27,295) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to the provisions of 37 CFR 1.17 and 1.136(a), Applicant respectfully petitions for a two (2) month extension of time for filing a response in connection with the present application. The required fee of \$450.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit

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Account No. 02-2448 for any additional fee required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Translation of Spanish application

Stone Support System for building cladding.



It allows the assembling out of sequence and at different heights, as well as the substitution of any stone slab without breaking the structure.

It has a versatile modular aluminium grid system or similar, easily assembled to the structure of any building without modifying the architectural design of it. It includes:

- Fixing mullions (1) to the horizontal members (4, 16,18). They have a rectangular section with two consecutive serrated faces (10) and both furrows (21) for the bolts that enables the installation and auto levelling.
- Anchors (3) to be fixed to the mullions (1) and to the vertical mullions (2) or to the wall.
- Horizontal members (4,16,18) placed in all the horizontal joints of the stone slabs (5) that are continuously kerfed (6) in the top and bottom edge.
- Extruded aluminium clip (9,19) for the stone slabs (5) at the top edge of them.

Stone Support System for building cladding.

Object of the invention.

This invention, as said in the descriptive memory text, refers to a stone support system for building cladding, designed to accommodate various stone materials thickness and sizes using a versatile modular aluminium grid system which can be easily attached to any building structure while maintaining the architectural appearance.

Background of the invention.

There is a punctual mechanical anchoring system which needs a (brick or concrete) wall to attach the mechanical anchor. The anchors fix the stones in two load points and two restraint points. With this system, if the stones need to be removed, the mechanical tool must be broken in a very complicated process.

With this traditional method, the stone slabs have to be installed in sequences and the levelling both in ~~leads~~ and levels has to be checked frequently.

plumb

Description of the invention.

Generally speaking the stone support system for building cladding consists of the following main elements:

**Mullion.** An extruded aluminium mullion spaced as required to adequately and efficiently support the horizontal member for windload, deadload and torsion. Note that mullions do not have to coincide with vertical stone joint locations. Continuous bolt tracks and serrations (teeth) are extruded into two faces of the mullions to allow the mullion to be rotated 90 degrees for conditions where cavity space is too tight for normal (strong) orientation. The bolt track allows the anchor to be placed at any location along the mullion without fabrication and the serrations provide positive resistance against windload without introducing shear on the bolt.

**Anchor.** An extruded aluminium anchor with extruded serrations designed to match and interlock with the vertical mullions. The anchors shall be slotted in/out to provide for construction tolerance of the back-up structure. Windload is resisted through the interlocking serration between the mullion and the anchor. Self-drilling self-tapping deadload screws will be installed through the anchor into the mullion as required to resist gravity load of the stone and aluminium.

**Horizontal.** An extruded aluminium member to be installed at each horizontal joint and to run continuously across and attach to several mullions. Attachment is accomplished using Elco Driflex self-tapping screws with Stalguard coating. Extrusion is tubular to provide additional torsional capacity due to eccentricity of the stone's centre of gravity. The stone is continuously kerfed at the bottom edge to sit on and engage with the horizontal member.

**Stone clip.** An extruded aluminium clip (restraint clip) designed to insert into top kerf of the stone and to snap (interlock) into horizontal extrusion. Lengths of the clip to be as required to meet design windloads and shall be at  $\frac{1}{4}$  points of the stone.

One of the most singular characteristics of this stone support system is that it is not sequential, it allows the installation of the stone leaving empty areas that afterwards can be easily filled without any special adjustments.

The differences and advantages of the proposed system against the punctual mechanical anchoring system mentioned above are the following:

- As the system is designed to span from floor to floor it does not necessarily require any supporting brick or block structure. Furthermore, both these trades can be performed either together or independently.
- The stone is supported by the horizontal profile thus distributing the load along the total length of the unit and not in individual spot locations as would be the case with mechanical anchors.
- The special restraint clips allow the simple substitution of any piece without damaging the structure or the piece itself.
- The stones can be installed out of sequence and on different elevations if it were necessary.
- The system is designed to be self-levelling thanks to the serrations on the mullion and the anchor making its installation both swift and simple.
- The system can absorb most building tolerances and any possible construction defects.

In order to understand the invention characteristics and as a part of this descriptive memory, we enclose some plans in which the following has been represented:

#### Short description of the drawings.

Detail 1. - It is a partial perspective view of the stone support system, following the invention.

Detail 2. - It is a view of the tubular profile that defines the mullions, as shown in detail 1.

Detail 3. - It is a profile view of the anchor pieces that fix the mullions to the floors.

Detail 4. - It is a transversal section of the horizontal members between the mullions.

Detail 5. - It is a profile view of the stone clips at the top edge of the stones.

Detail 6. - It is a view of the horizontal member used at the bottom edge of the cladding.

Detail 7. - It is a view of the horizontal member used in the top closing of the cladding.

Detail 8. - It is a view of one of the anchor pieces used to join the horizontal member of the detail 7, to restraint the top line of the cladding pieces.

### Description of the typical installation system.

With reference to the numbers of the details, we can appreciate that the stone support system, that our invention proposes, develops from the accommodation of a versatile modular aluminium grid system, defined by mullions 1 that are installed vertically fixed to the floors 2 with anchor pieces 3. The horizontal members 4 are fixed with screws to the mullions 1, which are installed in all the horizontal joints of the stone slabs 5. These are perfectly adjusted to the horizontal kerfs 6 of their length edges 4, as well as to the downwards wings 8 already foreseen in the restrain clips generally mentioned with number 9. In the bottom kerfs 6 of the stone slabs the legs 8 of the restrain clips 9 are perfectly connected by their clipping to the horizontal members 4, since both elements have ...

In picture number 2 we can see with further details the geometric shape of the mullion 1, with tubular structure. Its section has two consecutive sides with serrations 10 which adjusts to the existing ones in the anchor pieces 3 (see picture 3).

In picture 1 is clearly shown how the anchor pieces 3 are fixed to the floor 2 with screws 11 with self-drilling self-tapping deadlock screws which do not show in this picture 1.

Paying special attention to pictures 4 and 5, we can see the way in which the stone slabs 5 are restraint by its top edge, once the leg 7 of the horizontal member has been introduced in its bottom kerf. The fixing is made with the anchors 9 which hook the horizontal member 4 both at the back with the serrations 12 that are located at the end of the spear point of the horizontal leg 13 of the bottom edge of the horizontal member 4, as shown in picture 4. At the front part there are also joint ways between the horizontal members and the restrain clips since these have wedges that are introduced in the front recess 15 at the base of the upwards leg 7 of the mentioned horizontal member 4.

In picture 6 the horizontal member that is used as the starting element of the bottom part of the cladding has been numbered 16. It can be distinguished from the horizontal member 4 of the middle positions in the lack of wedges 13 in the leg that fixes to the mullion 1 by the bottom part, since it holds the upper leg 17.

In picture 7 the geometry of the horizontal member section 18 is shown as it is used to close the top of the cladding. This horizontal member 18 lacks of an upwards leg 7 since the stone slabs 5 are only fixed with the upper restrain clips that are different from the ones with number 9 shown in picture 5. Their design is shown in picture 8 with the general number 19. Its wedge orientation differs. In this case it goes upwards since it has to join the leg 20 of the upper part of the horizontal member 18. Once the downwards leg 8 of the restrain clip 19 has been introduced in the upper kerf 6 of the upper purlin stone slabs 5 with a small pressure to put it vertically, the wedges 12 and the leg with the spear point 20 interlock guaranteeing the stable fixing of the stone slabs 5. The horizontal member 18 has a tubular structure and is fixed to the mullions 1 with self-tapping screws through the downward leg 17.

Going back to picture 2 we can see the furrows with number 21 for the mullions' assembling bolts, enabling the installation and self-levelling of them regarding the anchors 3 that are already fixed to the floor 2. The anchors have a slot, or even an open kerf to absorb the tolerances that may occur in the support structure.

#### CLAIMS.

1. - **Stone Support System for building cladding** designed to allow the installation out of sequence and at different heights, as well as the substitution of any stone slab in a simple way without breaking the structure. It uses a versatile modular aluminium grid system, which can be easily attached to any building structure while maintaining the architectural appearance. It consists of the following basic components:

- **Mullions (1)** as a vertical support element of the horizontal members (4,16,18) installed at determined distances, with a rectangular section and two consecutive serrated sides (10). The serrated sides (10) have furrows (21) for the bolts that enables the installation and self-levelling according to the anchors (3) already fixed to the floors and that have a slot in their free leg.
- **Anchors (3)** to fix the mullions (1) to the floors (2) or to the wall, defined by squares "L" with an external serrated (10) coincident with the mullions (1) that adjust to these self-drilling screws and to the floors (2) with an expansion bolt introduced in a special hole.

- Horizontal members (4,16,18) installed in all the horizontal joints of the stone slabs (5), crossing the mullions (1) and supporting them. They are tubular and they have an attached upwards leg (7) inserting in the continuous kerf (6) at the bottom edge of the stone slabs (5), being previously attached to the mullions with self-drilling self-tapping screws by the legs (17) of the member section (4,16,18).
- Stone clip (9,19) at the top edge of the stones, with a downwards vertical leg (8) to be introduced in the continuous kerf (6) on the top edge of the stone slabs (5). This stone clip is restraint in the horizontal member.

**2. - Stone Support System for building cladding**, as in claim 1, characterised by the horizontal member (4,18) has an horizontal leg (13,20) finished with a spear point where it matches and a teeth is restraint (12) as mentioned in the stone clip (9,19).

**3. - Stone Support System for building cladding**, as in claim 1, characterised by a horizontal member (4) that has a frontal recess (15) for the introduction of a attached leg (14) that emerges from the front edge of the stone clip (9).

**4. - Stone Support System for building cladding**, as in claim 2, characterised by an horizontal member (4) has an horizontal leg (13) that joins the stone clip (9), emerging from the bottom side of the tubular portion and specially from an inferior leg (17) as an extension of the longer side of the rectangular tubular section.

**5. - Stone Support System for building cladding**, as in claim 2, characterised by a horizontal member (18) at the top edge of the cladding to restrain the top stone slabs (5) that have a horizontal leg (20) connected to the stone clip (19) emerging from the leg of the upper part of its rectangular tubular configuration.

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